

SEQUENCE LISTING

<110> Apicella, M. A.
 Edwards, J. L.
 Gibson, B. W.
 Scheffler, K.
 Brown, E.

<120> Vaccine and compositions for the
 prevention and treatment of Neisserial infections

<130> 875.045US1

<150> US 60/344,452

<151> 2001-10-23

<150> US 60/310,356

<151> 2001-08-06

<150> US 60/266,070

<151> 2001-01-31

<160> 12

<210> 1

<211> 2015

<212> PRT

<213> Neisseria gonorrhoeae

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Ala	Gly	Ser	Ser	Val	Ser	Val	Ser	Leu	Lys	Thr	Ser	Gly	Asp	Leu	Cys
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Gly	Lys	Leu	Lys	Thr	Thr	Leu	Lys	Thr	Leu	Val	Cys	Ser	Leu	Val	Ser
	50					55					60				
Leu	Ser	Met	Val	Leu	Pro	Ala	His	Ala	Gln	Ile	Thr	Thr	Asp	Lys	Ser
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Ala	Pro	Lys	Asn	Gln	Gln	Val	Val	Ile	Leu	Lys	Thr	Asn	Thr	Gly	Ala
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Pro	Leu	Val	Asn	Ile	Gln	Thr	Pro	Asn	Gly	Arg	Gly	Leu	Ser	His	Asn
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		115					120					125			
Asp	Arg	Asn	Asn	Asn	Pro	Phe	Leu	Val	Lys	Gly	Ser	Ala	Gln	Leu	Ile
	130				135						140				
Leu	Asn	Glu	Val	Arg	Gly	Thr	Ala	Ser	Lys	Leu	Asn	Gly	Ile	Val	Thr
145				150					155					160	
Val	Gly	Gly	Gln	Lys	Ala	Asp	Val	Ile	Ile	Ala	Asn	Pro	Asn	Gly	Ile
			165						170					175	
Thr	Val	Asn	Gly	Gly	Gly	Phe	Lys	Asn	Val	Gly	Arg	Gly	Ile	Leu	Thr
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Ile	Gly	Ala	Pro	Gln	Ile	Gly	Lys	Asp	Gly	Ala	Leu	Thr	Gly	Phe	Asp
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Val	Arg	Gln	Gly	Thr	Leu	Thr	Val	Gly	Ala	Ala	Gly	Trp	Asn	Asp	Lys
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Gly	Gly	Ala	Asp	Tyr	Thr	Gly	Val	Leu	Ala	Arg	Ala	Val	Ala	Leu	Gln
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Gly	Lys	Leu	Gln	Gly	Lys	Asn	Leu	Ala	Val	Ser	Thr	Gly	Pro	Gln	Lys
			245						250					255	
Val	Asp	Tyr	Ala	Ser	Gly	Glu	Ile	Ser	Ala	Gly	Thr	Ala	Ala	Gly	Thr
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Lys	Pro	Thr	Ile	Ala	Leu	Asp	Thr	Ala	Ala	Leu	Gly	Gly	Met	Tyr	Ala
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Asp	Ser	Ile	Thr	Leu	Ile	Ala	Asn	Glu	Lys	Gly	Val	Gly	Val	Lys	Asn
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Ala	Gly	Thr	Leu	Glu	Ala	Ala	Lys	Gln	Leu	Ile	Val	Thr	Ser	Ser	Gly
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Arg	Ile	Glu	Asn	Ser	Gly	Arg	Ile	Ala	Thr	Thr	Ala	Asp	Gly	Thr	Glu
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Ala	Ser	Pro	Thr	Tyr	Leu	Ser	Ile	Glu	Thr	Thr	Glu	Lys	Gly	Ala	Ala
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Gly	Thr	Phe	Ile	Ser	Asn	Gly	Gly	Arg	Ile	Glu	Ser	Lys	Gly	Leu	Leu
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Val	Ile	Glu	Thr	Gly	Glu	Asp	Ile	Ser	Leu	Arg	Asn	Gly	Ala	Val	Val
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Gln	Asn	Asn	Gly	Ser	Arg	Pro	Ala	Thr	Thr	Val	Leu	Asn	Ala	Gly	His
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Asn	Leu	Val	Ile	Glu	Ser	Lys	Thr	Asn	Val	Asn	Asn	Ala	Lys	Gly	Ser
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Ala	Asn	Leu	Ser	Ala	Gly	Gly	Arg	Thr	Thr	Ile	Asn	Asp	Ala	Thr	Ile
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Gln	Ala	Gly	Ser	Ser	Val	Tyr	Ser	Ser	Thr	Lys	Gly	Asp	Thr	Glu	Leu
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Gly	Glu	Asn	Thr	Arg	Ile	Ile	Ala	Glu	Asn	Val	Thr	Val	Leu	Ser	Asn
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Gly	Ser	Ile	Gly	Ser	Ala	Ala	Val	Ile	Glu	Ala	Lys	Asp	Thr	Ala	His
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Ile	Glu	Ser	Gly	Lys	Pro	Leu	Ser	Leu	Glu	Thr	Ser	Thr	Val	Ala	Ser
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Asn	Ile	Arg	Leu	Asn	Asn	Gly	Asn	Ile	Lys	Gly	Gly	Lys	Gln	Leu	Ala
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Leu	Leu	Ala	Asp	Asp	Asn	Ile	Thr	Ala	Lys	Thr	Thr	Asn	Leu	Asn	Thr
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Pro	Gly	Asn	Leu	Tyr	Val	His	Thr	Gly	Lys	Asp	Leu	Asn	Leu	Asn	Val
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Asp	Lys	Asp	Leu	Ser	Ala	Ala	Ser	Ile	His	Leu	Lys	Ser	Asp	Asn	Ala
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Ala	His	Ile	Thr	Gly	Thr	Ser	Lys	Thr	Leu	Thr	Ala	Ser	Lys	Asp	Met
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Asn	Ser	Gly	Asn	Leu	His	Ile	Gln	Ala	Ala	Lys	Gly	Asn	Ile	Gln	Leu
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Arg	Asn	Thr	Lys	Leu	Asn	Ala	Ala	Lys	Ala	Leu	Glu	Thr	Thr	Ala	Leu
	610					615						620			
Gln	Gly	Asn	Ile	Val	Ser	Asp	Gly	Leu	His	Ala	Val	Ser	Ala	Asp	Gly
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His	Val	Ser	Leu	Leu	Ala	Asn	Gly	Asn	Ala	Asp	Phe	Thr	Gly	His	Asn
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Thr	Leu	Thr	Ala	Lys	Ala	Asp	Val	Asn	Ala	Gly	Ser	Val	Gly	Lys	Gly
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Arg	Leu	Lys	Ala	Asp	Asn	Thr	Asn	Ile	Thr	Ser	Ser	Ser	Gly	Asp	Ile
		675					680						685		

Thr	Leu	Val	Ala	Gly	Asn	Gly	Ile	Gln	Leu	Gly	Asp	Gly	Lys	Gln	Arg	690	695	700
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Ala	Asp	Leu	Lys	Asn	Leu	Asn	Val	His	Ala	Lys	Ser	Gly	Ala	Leu	Asn	725	730	735
Ile	His	Ser	Asp	Arg	Ala	Leu	Ser	Ile	Glu	Asn	Thr	Lys	Leu	Glu	Ser	740	745	750
Thr	His	Asn	Thr	His	Leu	Asn	Ala	Gln	His	Glu	Arg	Val	Thr	Leu	Asn	755	760	765
Gln	Val	Asp	Ala	Tyr	Ala	His	Arg	His	Leu	Ser	Ile	Thr	Gly	Ser	Gln	770	775	780
Ile	Trp	Gln	Asn	Asp	Lys	Leu	Pro	Ser	Ala	Asn	Lys	Leu	Val	Ala	Asn	785	790	795
Gly	Val	Leu	Ala	Leu	Asn	Ala	Arg	Tyr	Ser	Gln	Ile	Ala	Asp	Asn	Thr	805	810	815
Thr	Leu	Arg	Ala	Gly	Ala	Ile	Asn	Leu	Thr	Ala	Gly	Thr	Ala	Leu	Val	820	825	830
Lys	Arg	Gly	Asn	Ile	Asn	Trp	Ser	Thr	Val	Ser	Thr	Lys	Thr	Leu	Glu	835	840	845
Asp	Asn	Ala	Glu	Leu	Lys	Pro	Leu	Ala	Gly	Arg	Leu	Asn	Ile	Glu	Ala	850	855	860
Gly	Ser	Gly	Thr	Leu	Thr	Ile	Glu	Pro	Ala	Asn	Arg	Ile	Ser	Ala	His	865	870	875
Thr	Asp	Leu	Ser	Ile	Lys	Thr	Gly	Gly	Lys	Leu	Leu	Leu	Ser	Ala	Lys	885	890	895
Gly	Gly	Asn	Ala	Gly	Ala	Pro	Ser	Ala	Gln	Val	Ser	Ser	Leu	Glu	Ala	900	905	910
Lys	Gly	Asn	Ile	Arg	Leu	Val	Thr	Gly	Glu	Thr	Asp	Leu	Arg	Gly	Ser	915	920	925
Lys	Ile	Thr	Ala	Gly	Lys	Asn	Leu	Val	Val	Ala	Thr	Thr	Lys	Gly	Lys	930	935	940
Leu	Asn	Ile	Glu	Ala	Val	Asn	Asn	Ser	Phe	Ser	Asn	Tyr	Phe	Pro	Thr	945	950	955
Gln	Lys	Ala	Ala	Glu	Leu	Asn	Gln	Lys	Ser	Lys	Glu	Leu	Glu	Gln	Gln	965	970	975
Ile	Ala	Gln	Leu	Lys	Lys	Ser	Ser	Pro	Lys	Ser	Lys	Leu	Ile	Pro	Thr	980	985	990
Leu	Gln	Glu	Glu	Arg	Asp	Arg	Leu	Ala	Phe	Tyr	Ile	Gln	Ala	Ile	Asn	995	1000	1005
Lys	Glu	Val	Lys	Gly	Lys	Lys	Pro	Lys	Gly	Lys	Glu	Tyr	Leu	Gln	Ala	1010	1015	1020
Lys	Leu	Ser	Ala	Gln	Asn	Ile	Asp	Leu	Ile	Ser	Ala	Gln	Gly	Ile	Glu	1025	1030	1035
Ile	Ser	Gly	Ser	Asp	Ile	Thr	Ala	Ser	Lys	Lys	Leu	Asn	Leu	His	Ala	1045	1050	1055
Ala	Gly	Val	Leu	Pro	Lys	Ala	Ala	Asp	Ser	Glu	Ala	Ala	Ala	Ile	Leu	1060	1065	1070
Ile	Asp	Gly	Ile	Thr	Asp	Gln	Tyr	Glu	Ile	Gly	Lys	Pro	Thr	Tyr	Lys	1075	1080	1085
Ser	His	Tyr	Asp	Lys	Ala	Ala	Leu	Asn	Lys	Pro	Ser	Arg	Leu	Thr	Gly	1090	1095	1100
Arg	Thr	Gly	Val	Ser	Ile	His	Ala	Ala	Ala	Ala	Leu	Asp	Asp	Ala	Arg	1105	1110	1115
Ile	Ile	Ile	Gly	Ala	Ser	Glu	Ile	Lys	Ala	Pro	Ser	Gly	Ser	Ile	Asp	1125	1130	1135
Ile	Lys	Ala	His	Ser	Asp	Ile	Val	Leu	Glu	Ala	Gly	Gln	Asn	Asp	Ala	1140	1145	1150

Tyr Thr Phe Leu Lys Thr Lys Gly Lys Ser Gly Lys Ile Ile Arg Lys
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 Thr Lys Phe Thr Ser Thr Arg Asp His Leu Ile Met Pro Ala Pro Val
 1170 1175 1180
 Glu Leu Thr Ala Asn Gly Ile Thr Leu Gln Ala Gly Gly Asn Ile Glu
 1185 1190 1195 1200
 Ala Asn Thr Thr Arg Phe Asn Ala Pro Ala Gly Lys Val Thr Leu Val
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 Ala Gly Glu Glu Leu Gln Leu Leu Ala Glu Glu Gly Ile His Lys His
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 Glu Leu Asp Val Gln Lys Ser Arg Arg Phe Ile Gly Ile Lys Val Gly
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 Lys Ser Asn Tyr Ser Lys Asn Glu Leu Asn Glu Thr Lys Leu Pro Val
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 Arg Val Val Ala Gln Thr Ala Ala Thr Arg Ser Gly Trp Asp Thr Val
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 Leu Glu Gly Thr Glu Phe Lys Thr Thr Leu Ala Gly Ala Asp Ile Gln
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 Ala Gly Val Gly Glu Lys Ala Arg Val Asp Ala Lys Ile Ile Leu Lys
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 Gly Gly Tyr Ile Val Asp Ile Pro Lys Gly Asn Leu Lys Thr Glu Ile
 1365 1370 1375
 Glu Lys Leu Ser Lys Gln Pro Glu Tyr Ala Tyr Leu Lys Gln Leu Gln
 1380 1385 1390
 Val Ala Lys Asn Ile Asn Trp Asn Gln Val Gln Leu Ala Tyr Asp Arg
 1395 1400 1405
 Trp Asp Tyr Lys Gln Glu Gly Leu Thr Glu Ala Gly Ala Ala Ile Ile
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 Ala Leu Ala Val Thr Val Thr Ser Gly Ala Gly Thr Gly Ala Val
 1425 1430 1435 1440
 Leu Gly Leu Asn Gly Ala Ala Ala Ala Ala Thr Asp Ala Ala Phe Ala
 1445 1450 1455
 Ser Leu Ala Ser Gln Ala Ser Val Ser Phe Ile Asn Asn Lys Gly Asp
 1460 1465 1470
 Val Gly Lys Thr Leu Lys Glu Leu Gly Arg Ser Ser Thr Val Lys Asn
 1475 1480 1485
 Leu Val Val Ala Ala Ala Thr Ala Gly Val Ala Asp Lys Ile Gly Ala
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 Ser Ala Leu Asn Asn Val Ser Asp Lys Gln Trp Ile Asn Asn Leu Thr
 1505 1510 1515 1520
 Val Asn Leu Ala Asn Ala Gly Ser Ala Ala Leu Ile Asn Thr Ala Ile
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 Asn Gly Gly Ser Leu Lys Asp Asn Leu Gly Asp Ala Ala Leu Gly Ala
 1540 1545 1550
 Ile Val Ser Thr Val His Gly Glu Val Ala Ser Lys Ile Lys Phe Asn
 1555 1560 1565
 Leu Ser Glu Asp Tyr Ile Thr His Lys Ile Ala His Ala Ile Ala Gly
 1570 1575 1580
 Cys Ala Ala Ala Ala Asn Lys Gly Lys Cys Gln Asp Gly Ala Ile
 1585 1590 1595 1600
 Gly Ala Ala Val Gly Glu Ile Val Gly Glu Ala Leu Thr Asn Gly Lys
 1605 1610 1615

Asn Pro Ala Thr Leu Thr Ala Lys Glu Arg Glu Gln Ile Leu Ala Tyr
 1620 1625 1630
 Ser Lys Leu Val Ala Gly Thr Val Ser Gly Val Val Gly Gly Asp Val
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 Asn Thr Ala Ala Asn Ala Ala Lys Val Ala Ile Glu Asn Asn Leu Leu
 1650 1655 1660
 Ser Gln Glu Glu Tyr Ala Leu Arg Glu Lys Leu Ile Lys Lys Ala Lys
 1665 1670 1675 1680
 Gly Lys Gly Leu Leu Ser Leu Asp Trp Gly Ser Leu Thr Glu Gln Glu
 1685 1690 1695
 Ala Arg Gln Phe Ile Tyr Leu Ile Glu Lys Asp Arg Tyr Ser Asn Gln
 1700 1705 1710
 Leu Leu Asp Arg Tyr Gln Lys Asn Pro Ser Ser Leu Asn Asn Gln Glu
 1715 1720 1725
 Lys Asn Ile Leu Ala Tyr Phe Ile Asn Gln Thr Ser Gly Gly Asn Thr
 1730 1735 1740
 Ala Trp Ala Ala Ser Ile Leu Lys Thr Pro Gln Ser Met Gly Asn Leu
 1745 1750 1755 1760
 Thr Ile Pro Ser Lys Asp Ile Asn Asn Thr Leu Ser Lys Ala Tyr Gln
 1765 1770 1775
 Thr Leu Ser Arg Tyr Asp Ser Phe Asp Tyr Lys Ser Ala Val Ala Ala
 1780 1785 1790
 Gln Pro Ala Leu Tyr Leu Leu Asn Gly Pro Leu Gly Phe Ser Val Lys
 1795 1800 1805
 Ala Ala Thr Val Ala Ala Gly Gly Tyr Asn Ile Gly Gln Gly Ala Lys
 1810 1815 1820
 Ala Ile Ser Asn Gly Glu Tyr Leu His Gly Thr Val Gln Val Val Asn
 1825 1830 1835 1840
 Gly Thr Leu Met Val Ala Gly Ser Val Ser Ala Gln Ala Ala Ile Ser
 1845 1850 1855
 Ala Lys Pro Ala Pro Val Thr Arg Tyr Leu Ser Asn Asp Ser Ala Pro
 1860 1865 1870
 Ala Leu Arg Gln Ala Leu Thr Ala Glu Ser Gln Arg Ile Arg Met Lys
 1875 1880 1885
 Leu Pro Glu Glu Tyr Arg Gln Ile Gly Asn Leu Ala Ile Ala Lys Ile
 1890 1895 1900
 Asp Val Lys Gly Leu Pro Gln Arg Met Glu Ala Phe Ser Ser Phe Gln
 1905 1910 1915 1920
 Lys Gly Glu His Gly Phe Ile Ser Leu Pro Glu Thr Lys Ile Phe Lys
 1925 1930 1935
 Pro Ile Ser Val Asp Lys Tyr His Asn Ile Ala Ser Pro Pro Arg Gly
 1940 1945 1950
 Thr Leu Arg Asn Ile Asp Gly Glu Tyr Lys Leu Leu Glu Thr Ile Ala
 1955 1960 1965
 Gln Gln Leu Gly Asn Asn Arg Asn Val Ser Gly Arg Ile Asp Leu Phe
 1970 1975 1980
 Thr Glu Leu Lys Ala Cys Gln Ser Cys Ser Asn Val Ile Leu Glu Phe
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 2005 2010 2015

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 <213> Neisseria gonorrhoeae

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Thr	Glu	Gln	Ser	Val	Gly	Leu	Glu	Thr	Val	Ser	Val	Val	Gly	Lys	Ser
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Arg	Pro	Arg	Ala	Thr	Ser	Gly	Leu	Leu	His	Thr	Ser	Thr	Ala	Ser	Asp
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Lys	Ile	Ile	Ser	Gly	Asp	Thr	Leu	Arg	Gln	Lys	Ala	Val	Asn	Leu	Gly
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Asp	Ala	Leu	Asp	Gly	Val	Pro	Gly	Ile	His	Ala	Ser	Gln	Tyr	Gly	Gly
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Gly	Ala	Ser	Ala	Pro	Val	Ile	Arg	Gly	Gln	Thr	Gly	Arg	Arg	Ile	Lys
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Val	Leu	Asn	His	His	Gly	Glu	Thr	Gly	Asp	Met	Ala	Asp	Phe	Ser	Pro
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Asp	His	Ala	Ile	Met	Val	Asp	Ser	Ala	Leu	Ser	Gln	Gln	Val	Glu	Ile
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Leu	Val	Asp	Val	Ala	Asp	Gly	Lys	Ile	Pro	Glu	Lys	Met	Pro	Glu	Asn
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Gly	Val	Ser	Gly	Glu	Leu	Gly	Leu	Arg	Leu	Ser	Ser	Gly	Asn	Leu	Glu
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Lys	Leu	Thr	Ser	Gly	Gly	Ile	Asn	Ile	Gly	Leu	Gly	Lys	Asn	Phe	Val
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Leu	His	Thr	Glu	Gly	Leu	Tyr	Arg	Lys	Ser	Gly	Asp	Tyr	Ala	Val	Pro
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Arg	Tyr	Arg	Asn	Leu	Lys	Arg	Leu	Pro	Asp	Ser	His	Ala	Asp	Ser	Gln
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Thr	Gly	Ser	Ile	Gly	Leu	Ser	Trp	Val	Gly	Glu	Lys	Gly	Phe	Ile	Gly
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Ala	Ala	Tyr	Ser	Asp	Arg	Arg	Asp	Gln	Tyr	Gly	Leu	Pro	Ala	His	Ser
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His	Glu	Tyr	Asp	Asp	Cys	His	Ala	Asp	Ile	Ile	Trp	Gln	Lys	Ser	Leu
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Ile	Asn	Lys	Arg	Tyr	Leu	Gln	Leu	Tyr	Pro	His	Leu	Leu	Thr	Glu	Glu
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Asp	Ile	Asp	Tyr	Asp	Asn	Pro	Gly	Leu	Ser	Cys	Gly	Phe	His	Asp	Asp
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Asp	Asp	Ala	His	Ala	His	Ala	His	Asn	Gly	Lys	Pro	Trp	Ile	Asp	Leu
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Arg	Asn	Lys	Arg	Tyr	Glu	Leu	Arg	Ala	Glu	Trp	Lys	Gln	Pro	Phe	Pro
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Gly	Phe	Glu	Ala	Leu	Arg	Val	His	Leu	Asn	Arg	Asn	Asp	Tyr	Arg	His
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Asp	Glu	Lys	Ala	Gly	Asp	Ala	Val	Glu	Asn	Phe	Phe	Asn	Asn	Gln	Thr
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Gln	Asn	Ala	Arg	Ile	Glu	Leu	Arg	His	Gln	Pro	Ile	Gly	Arg	Leu	Lys
385					390					395					400
Gly	Ser	Trp	Gly	Val	Gln	Tyr	Leu	Gly	Gln	Lys	Ser	Ser	Ala	Leu	Ser
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Ala	Thr	Ser	Glu	Ala	Val	Lys	Gln	Pro	Met	Leu	Leu	Asp	Asn	Lys	Val
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Gln	His	Tyr	Ser	Phe	Phe	Gly	Val	Glu	Gln	Ala	Asn	Trp	Asp	Asn	Phe
		435					440					445			
Thr	Leu	Glu	Gly	Gly	Val	Arg	Val	Glu	Lys	Gln	Lys	Ala	Ser	Ile	Arg
	450					455					460				

Tyr	Asp	Lys	Ala	Leu	Ile	Asp	Arg	Glu	Asn	Tyr	Tyr	Asn	His	Pro	Leu
465					470					475					480
Pro	Asp	Leu	Gly	Ala	His	Arg	Gln	Thr	Ala	Arg	Ser	Phe	Ala	Leu	Ser
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Gly	Asn	Trp	Tyr	Phe	Thr	Pro	Gln	His	Lys	Leu	Ser	Leu	Thr	Ala	Ser
		500						505					510		
His	Gln	Glu	Arg	Leu	Pro	Ser	Thr	Gln	Glu	Leu	Tyr	Ala	His	Gly	Lys
		515					520					525			
His	Val	Ala	Thr	Asn	Thr	Phe	Glu	Val	Gly	Asn	Lys	His	Leu	Asn	Lys
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Glu	Arg	Ser	Asn	Asn	Ile	Glu	Leu	Ala	Leu	Gly	Tyr	Glu	Gly	Asp	Arg
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Trp	Gln	Tyr	Asn	Leu	Ala	Leu	Tyr	Arg	Asn	Arg	Phe	Gly	Asn	Tyr	Ile
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Tyr	Ala	Gln	Thr	Leu	Asn	Asp	Gly	Arg	Gly	Pro	Lys	Ser	Ile	Glu	Asp
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Asp	Ser	Glu	Met	Lys	Leu	Val	Arg	Tyr	Asn	Gln	Ser	Gly	Ala	Asp	Phe
		595					600					605			
Tyr	Gly	Ala	Glu	Gly	Glu	Ile	Tyr	Phe	Lys	Pro	Thr	Pro	Arg	Tyr	Arg
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Ile	Gly	Val	Ser	Gly	Asp	Tyr	Val	Arg	Gly	Arg	Leu	Lys	Asn	Leu	Pro
625					630					635					640
Ser	Leu	Pro	Gly	Arg	Glu	Asp	Ala	Tyr	Gly	Asn	Arg	Pro	Leu	Ile	Ala
				645					650						655
Gln	Ala	Asp	Gln	Asn	Ala	Pro	Arg	Val	Pro	Ala	Ala	Arg	Leu	Gly	Val
			660					665					670		
His	Leu	Lys	Ala	Ser	Leu	Thr	Asp	Arg	Ile	Asp	Ala	Asn	Leu	Asp	Tyr
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Tyr	Arg	Val	Phe	Ala	Gln	Asn	Lys	Leu	Ala	Arg	Tyr	Glu	Thr	Arg	Thr
	690					695					700				
Pro	Gly	His	His	Met	Leu	Asn	Leu	Gly	Ala	Asn	Tyr	Arg	Arg	Asn	Thr
705				710						715					720
Arg	Tyr	Gly	Glu	Trp	Asn	Trp	Tyr	Val	Lys	Ala	Asp	Asn	Leu	Leu	Asn
			725						730						735
Gln	Ser	Val	Tyr	Ala	His	Ser	Ser	Phe	Leu	Ser	Asp	Thr	Pro	Gln	Met
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Gly	Arg	Ser	Phe	Thr	Gly	Gly	Val	Asn	Val	Lys	Phe				
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<400> 3
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 35 40 45
 Ile Val Thr Leu Gln Gln Lys Asp Glu Ser Thr Ala Thr Asp Met Arg
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Thr Tyr Pro Gln Lys Phe Met His Phe Leu Gln Glu Tyr Ile Gly Gln
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<212> DNA

<213> Neisseria gonorrhoeae

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<211> 2307

<212> DNA

<213> Neisseria gonorrhoeae

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 <213> Neisseria gonorrhoeae

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 <213> Mus musculus

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 Val Met Glu Gln Phe Lys Lys Ser Lys Thr Leu Phe Ser Leu Met Gln
 35 40 45
 Tyr Ser Asp Glu Phe Arg Ile His Phe Thr Phe Asn Asp Phe Lys Arg
 50 55 60
 Asn Pro Ser Pro Arg Ser His Val Ser Pro Ile Lys Gln Leu Asn Gly
 65 70 75 80
 Arg Thr Lys Thr Ala Ser Gly Ile Arg Lys Val Val Arg Glu Leu Phe
 85 90 95
 His Lys Thr Asn Gly Ala Arg Glu Asn Ala Ala Lys Ile Leu Val Val
 100 105 110
 Ile Thr Asp Gly Glu Lys Phe Gly Asp Pro Leu Asp Tyr Lys Asp Val
 115 120 125
 Ile Pro Glu Ala Asp Arg Ala Gly Val Ile Arg Tyr Val Ile Gly Val
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 Gly Asn Ala Phe Asn Lys Pro Gln Ser Arg Arg Glu Leu Asp Thr Ile
 145 150 155 160
 Ala Ser Lys Pro Ala Gly Glu His Val Phe Gln Val Asp Asn Phe Glu
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